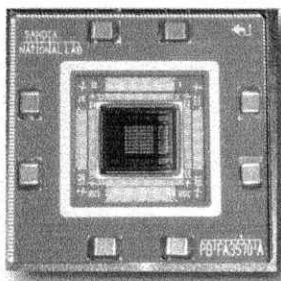


Figure 1. QASPR M&S Code Integration



Group 1430 developed and owns the majority of the modeling and simulation codes currently involved in the QASPR project. These codes include QUEST (Density Functional Theory - DFT), GRASP (Molecular Dynamics - MD), Charon (device modeling) and Xyce (circuit modeling). Additionally, the REOS code (device modeling) is also being used to support model development and discovery as Charon continues to be developed. When QASPR began in FY05, Group 1430 already had these capabilities in either development or in a state of production so that these tools were the obvious choice for the project. Since then, the staff in 1430 have strengthened their working relationship within the Group and developed strategic ones with the staff and management involved with the broader QASPR project.

W76-1 AFS

The Xyce team in 1437 is working with a team of electrical analysts in 8205 who are performing circuit calculations to help strengthen the technical basis for qualification of the W76-1 AFS to radiation environments. In particular, the teams are working closely with designers in 5350 to construct and simulate circuit models of the Driver and Logic Assembly boards within the AFS including the Permafrost 2 (PA2) ASIC that uses Sandia's radiation hard CMOS7 process. These models include appropriate radiation-aware devices that will be used to model performance under hostile conditions. Also part of this project is a validation effort for the various device models and the larger assembly model that will provide uncertainty, margins and confidence information associated with the simulation results. The results of these efforts are expected to be used as part of the Technical Basis for the W76-1 qualification and will be presented to the Navy in the Producibility Design Review in FY06.